METHOD AND APPARATUS FOR SWITCHING OPTICAL SIGNALS WITH A PHOTON BAND GAP DEVICE

ABSTRACT OF THE DISCLOSURE

An optical switch (11, 111, 211) includes a member (26) having a plurality of openings (31-42) therethrough which are arranged in a periodic pattern. A path (86-87, 91-92, 96-97) extends through the member from an input to an output, with a subset of the openings disposed along the path. In one operational mode, each of the openings contains a material having an index of refraction which is different from the index of refraction of the member, so as to define a photon band gap configuration that inhibits propagation through the member of radiation at a predetermined wavelength. In a different operational mode, the index of refraction of the subset of openings along the path has a different value, which permits radiation to propagate along the path.